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L14: Entry 5 of 8 File: JPAB Mar 7, 1989

PUB-NO: JP401059513A
DOCUMENT-IDENTIFIER: JP 01059513 A
TITLE: POWER FAILURE DETECTING CIRCUIT

PUBN-DATE: March 7, 1989

INVENTOR-INFORMATION:
NAME COUNTRY
YOTSUTSUJI, TAKASHI

ASSIGNEE-INFORMATION:
NAME COUNTRY
PFU LTD

APPL-NO: JP62217637
APPL-DATE: August 31, 1987

INT-CL (IPC): G06F 1/00; H02H 3/24; H02M 3/00

ABSTRACT:

PURPOSE: To guarantee a stable output operation, by outputting a power failure detecting signal by the time up of a timer by starting up the timer when a voltage being lowered at the time of power failure passes a high threshold value, but resetting the timer when the voltage arrives at a low threshold value by dropping steeply before that.

CONSTITUTION: To monitor the power failure, a monitoring voltage detection circuit 21 which detects the DC voltage of an input smoothing capacitor 20, a first comparator 23 provided with a first threshold value and outputs a set signal when a monitoring voltage decreases less than the first threshold value, a second comparator 24 provided with a second threshold value with a level less than that of the first threshold value and outputs a reset signal by deciding the dropping of the monitoring voltage less than the second threshold value as the abnormality of a power source, and the timer 26 set at an operating state by the set signal and reset by the reset signal and outputs the power failure detecting signal at the time of the arrival of a timer setting time are provided. In such a way, it is possible to change the state of a load or the output timing of the power failure detecting signal appropriately corresponding to the level of an input AC voltage before the generation of the power failure, and to bracket the abnormality of the power source from the power failure easily.

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L14: Entry 6 of 8 File: JPAB Nov 22, 1984

DOCUMENT-IDENTIFIER: JP 59206772 A
TITLE: INSTANTANEOUS POWER FAILURE DETECTOR

Abstract Text (2):
CONSTITUTION: A current limiting resistor 7, the trigger element 12 having the negative resistance characteristic and a light emitting diode 8A in a photocoupler are connected to the post stage of the AC power supply 4 and a diode bridge 5 for rectifying all waves in series. A phototransistor 8B in the photocoupler 8 is connected to a timer 3 so that a reset signal RES is sent to the timer 3 during a period that current, is made flow into the diode 8A. The trigger element 12 is conducted when an applied voltage attains a threshold value VT or more, continue the conduction after the conduction until the applied voltage is reduced to zero volt, then interrupted until the applied voltage reaches a brake over voltage again. The threshold voltage VT is previously set up to the reference voltage regulated as the voltage at the time of power failure. Thus, instantaneous power failure detection with high speed response can be attained.

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L21: Entry 4 of 4 File: USPT Oct 7, 1997

DOCUMENT-IDENTIFIER: US 5675816 A
TITLE: Magnetic disk subsystem with failsafe battery charging and power shut down

Current US Cross Reference Classification (2):
713/300

CLAIMS:

10. A magnetic disk apparatus comprising magnetic disk modules connected under the control of magnetic disk control means, power units which convert input voltage from an outside power supply to a predetermined DC voltage and supply the same to the magnetic disk modules, magnetic disk module battery units which supply the magnetic disk modules with the same DC voltage as the power units, and power control means which control the input and cut-off of the power of the power units and the magnetic disk modules, and detect a power failure, wherein said magnetic disk apparatus further includes:

the magnetic disk module battery units including charging completion detecting means which judge the completion of charging of the battery units accommodated when a charging current becomes less than a predetermined value and output a charging completion notification signal to the power control means; and

the power control means detecting a power failure after the charging completion detecting means detected the completion of charging, and including a charging completion invalidating means which invalidates the charging completion detection signal output from the charging completion detecting means at the time of detecting the power failure, whereby

when the charging completion notification signal is output while the charging current falls as a result of the power failure caused before the completion of charging, it can be judged that the charging has not yet been completed at the time of detection of the power failure.

11. A magnetic disk apparatus as set forth in claim 10, wherein provision is further made of a delaying means for causing a delay of a predetermined time to the charging completion notification signal from the charging completion detecting means and then supplying the same to the power control means and,

when the charging completion notification signal is output while the charging current is falling due to a power failure caused before the completion of charging, the charging completion notification signal is received after a power failure detection time of the power control means at a delay caused by the delay means, and it is judged that the charging has not yet been completed at the time of detection of the power failure.

12. A magnetic disk apparatus as set forth in claim 11, wherein when it is judged that the charging has been completed at the time of the detection of the power failure, the power control means instruct the magnetic disk control means to

disconnect the magnetic disk modules from the power units when a first predetermined back-up time has elapsed and stop the supply of power by the power units when receiving from the magnetic disk control means a cut-off authorization response.

14. A magnetic disk apparatus as set forth in claim 11, wherein when it is judged that the charging has not been completed at the time of the detection of the power failure, the power control means instruct the magnetic disk control means to disconnect the magnetic disk modules from the power units immediately without waiting for a first predetermined back-up time to elapse and stop the supply of power by the power units when receiving from the magnetic disk control means a cut-off authorization response.

17. A magnetic disk apparatus as set forth in claim 10, wherein

a charging completion judging means is provided at the power control means, which reads in and holds the charging completion notification signal at predetermined intervals, reads out the last charging completion detection signal detected before detecting a power failure, and judges the existence of the completion of charging and also,

when a charging completion notification signal is output while the charging current is falling due to the power failure occurring before the completion of charging, it can be judged that the charging has not yet been completed at the time of the detection of the power failure.

18. A magnetic disk apparatus as set forth in claim 17, wherein when it is judged that the charging has been completed at the time of the detection of the power failure, the power control means instruct the magnetic disk control means to disconnect the magnetic disk modules from the power units when a first predetermined back-up time has elapsed and stop the supply of power by the power units when receiving from the magnetic disk control means a cut-off authorization response.

20. A magnetic disk apparatus as set forth in claim 17, wherein when it is judged that the charging has not been completed at the time of the detection of the power failure, the power control means instruct the magnetic disk control means to disconnect the magnetic disk modules from the power units immediately without waiting for a first predetermined back-up time to elapse and stop the supply of power by the power units when receiving from the magnetic disk control means a cut-off authorization response.

23. A magnetic disk apparatus as set forth in claim 10, 11, or 17, wherein when it is judged that the charging has been completed at the time of the detection of the power failure, the power control means instructs the magnetic disk control means to disconnect the magnetic disk modules from the power units when a first predetermined back-up time has elapsed and stops the supply of power by the power units when receiving from the magnetic disk control means a cut-off authorization response.

24. A magnetic disk apparatus as set forth in claim 10, 11, or 17, wherein when it is judged that the charging has not been completed at the time of the detection of the power failure, the power control means instructs the magnetic disk control means to disconnect the magnetic disk modules from the power units immediately without waiting for a first predetermined back-up time to elapse and stops the supply of power by the power units when receiving from the magnetic disk control means a cut-off authorization response.

27. A magnetic disk apparatus comprising a main power unit provided with power units which receive as input an AC power and convert the same to DC voltage, and

battery units which are charged by the DC voltage of the power units and output the same DC voltage at the time of a power failure, magnetic disk modules which operate by receiving the power from the main power unit, a magnetic disk control unit which receives the power from the main power unit and controls the magnetic disk modules, and a power control unit which controls the input and cut-off of power from the main power unit to the magnetic disk modules and the magnetic disk control unit,

the power control unit having;

a power failure detecting means for detecting the stopping of the input of the AC power,

a first timer which activates when the power failure detecting means detect a power failure, monitor the time during which the input of power has stopped, and produce a timer output when a first predetermined back-up time has been reached; and

back-up control means for executing a power cut-off processing of the magnetic disk modules and the magnetic disk control unit on the basis of a power cut-off command which it received from a higher apparatus before the timer output of the first timer and for executing the power cut-off processing of the magnetic disk modules and the magnetic disk control unit when not receiving a command for power cut-off from the higher apparatus, but when the first timer output is obtained;

wherein the back-up control means as part of the power cut-off processing of the magnetic disk modules and the magnetic disk control unit, output a power cut-off control signal to the magnetic disk control unit to cause the input and output operation of the magnetic disk unit to end and, when receiving a cut-off authorization notification signal on the basis of the end of the input and output operation from the magnetic disk control unit, cut off the power of the magnetic disk modules and the magnetic disk control unit.

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L14: Entry 5 of 8 File: JPAB Mar 7, 1989

DOCUMENT-IDENTIFIER: JP 01059513 A
TITLE: POWER FAILURE DETECTING CIRCUIT

Abstract Text (1):
PURPOSE: To guarantee a stable output operation, by outputting a power failure detecting signal by the time up of a timer by starting up the timer when a voltage being lowered at the time of power failure passes a high threshold value, but resetting the timer when the voltage arrives at a low threshold value by dropping steeply before that.

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L14: Entry 3 of 8 File: USPT Mar 1, 1983

DOCUMENT-IDENTIFIER: US 4375663 A
TITLE: Power failure early warning circuit for microprocessor with CMOS RAM memory

Detailed Description Text (8):
When primary ac power fails, for example, at time t.sub.1 as shown in FIG. 2, the voltage on capacitor C6 decays as shown in FIG. 2 bringing the inverter 30 through its threshold and consequently causing the TRANSFER ENABLE signal on line 20 to go low at time t.sub.2 due to the operation of the intervening inverters 30, 31, 32, and 33 in conjunction with the resistor 60 which may, for example, have a value of 100 kilohms. As mentioned, the TRANSFER ENABLE signal going low will prevent the microprocessor 12 from making any data transfers although it will not prevent the completion of any transfers already initiated.

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L9: Entry 3 of 5 File: USPT Dec 12, 1989

DOCUMENT-IDENTIFIER: US 4886590 A

**** See image for Certificate of Correction ****

TITLE: Chemical process control system

Detailed Description Text (27):

At step 52 the beginning and ending times of any power failure are recorded in memory or on a hard copy. In step 53, following conventional procedures, the software executes diagnostic tests to ensure that the computer controlling the system is functioning properly. If at step 53 an error is detected, an error message is displayed on a CRT terminal or another output device in step 54. An alarm signal is also generated to alert, at step 55, an on-site or off-site system manager. Preferably, step 55 includes actuation of a modem or automatic dialing device that can telephone an on-site supervisory and/or an off-site service organization. Either through a modem with a voice synthesizer driven by the system software or an automatic dialer including a catalog of selectable pre-recorded messages, the recipient of the alert is told of the existence of and the nature of the problem. Depending upon the nature of the error indicated, the servicer may be able to supply a correction over a modem so that system operation can proceed. If the error cannot be corrected, the system stops at step 56 until further action is taken by the system servicer to correct the malfunction.

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L9: Entry 2 of 5 File: USPT Jul 3, 1990

DOCUMENT-IDENTIFIER: US 4939652 A
TITLE: Trip recorder

Detailed Description Text (18):
A method is provided for suspending the normal operation of the device in the event of a power failure, and for recording the time and duration of said failure. The feature of recording the time and duration of the failure is particularly useful to detect unauthorized removal of the unit, particularly since the unit is designed to be portable for data transfer to the computer. The method comprises:

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L10: Entry 1 of 6 File: JPAB Aug 10, 1984

PUB-NO: JP359139420A
DOCUMENT-IDENTIFIER: JP 59139420 A
TITLE: RECORDING SYSTEM OF POWER FAILURE TIME

PUBN-DATE: August 10, 1984

INVENTOR-INFORMATION:

NAME	COUNTRY
TARUSAWA, KUNIAKI	

ASSIGNEE-INFORMATION:

NAME	COUNTRY
FUJITSU LTD	

APPL-NO: JP58005089
APPL-DATE: January 13, 1983

US-CL-CURRENT: 365/228
INT-CL (IPC): G06F 1/00

ABSTRACT:

PURPOSE: To reduce the power consumption of an accumulator to make effective recording possible, by connecting a storage circuit or the like to the accumulator for countermeasure against power failure and storing the time of a clock in the storage circuit at intervals of a required time by a control part.

CONSTITUTION: A data processing device 1 is constituted with a storage circuit 2, a clock 3, control part 4, power failure detecting circuit 5, and an accumulator 6 for countermeasure against power failure, and the control part 4 stores the time of the clock 3 in the storage circuit 2 at intervals of a prescribed time and executes essential data processings. If the power failure state is set, the power failure detecting circuit 5 detects the power failure to stop the operation of the control part 4, and said storage of the time is stopped. When the power failure is released, the control part 4 reads the time in the storage circuit 2 and stores it in a required position to prepare for the next power failure.

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L14: Entry 1 of 8 File: USPT Jun 3, 2003

DOCUMENT-IDENTIFIER: US 6574062 B1
TITLE: Disk drive comprising a demand limit circuit for enhancing power management during spin down

Brief Summary Text (6):
If the internal supply voltage drops below a certain threshold for an extended period of time during a power failure mode, the analog and digital circuitry which control the power down sequence may malfunction or shut down. This can typically occur if the VCM driver draws an excessive amount of current from the internal supply voltage. For example, if the head is in the middle of a seek operation when power failure occurs, the VCM driver may draw excessive current in order to decelerate the head. In another example, the VCM driver may draw excessive current in order to prevent the head from bouncing away from the parking latch at the end of the park operation. Either of these events may pull down the internal supply voltage beyond a safe level, thereby rendering the power down operation questionable.

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